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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|----------------------------------|-------------|----------------------|----------------------|------------------|
| 10/761,250 | 01/22/2004 | Yong-Suk Choi | 8947-000066/US | 3819 |
| 30593 | 7590 | 11/02/2005 | EXAMINER | |
| HARNESS, DICKEY & PIERCE, P.L.C. | | | CHAUDHARI, CHANDRA P | |
| P.O. BOX 8910 | | | ART UNIT | PAPER NUMBER |
| RESTON, VA 20195 | | | 2891 | |

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/761,250

Applicant(s)

CHOI, YONG-SUK

Examiner

Chandra Chaudhari

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 15-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-7, 11-13 is/are rejected.
- 7) ☒ Claim(s) 3, 8-10 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date December 9, 2004.
- 4) ☐ Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Applicant's election with traverse of Group I in the reply filed on August 15, 2005 is acknowledged. The traversal is on the ground(s) that there is no burden on the examiner. This is not found persuasive because according to MPEP 806.05(f), only one-way distinctness needs to be shown, which would clearly lead to a burden by examining the two groups.

The requirement is still deemed proper and is therefore made FINAL.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 11, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ogura – US 6,177,318.

Ogura (Figs. 2e-6a and text in col. 4, line 42 to col. 6, line 6) discloses the claimed invention by forming a non-volatile memory device with a plurality of first gates 245, a plurality of charge storage spacers 230 (has oxide on both sides of the nitride layer), and a plurality of second gates 240. Since all of the process steps are disclosed, it is clear that an SONOS device is formed.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 4, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogura.

Ogura is applied as above and does not disclose forming a device isolating layer defining an active region, nor forming the gate insulating layer by thermal oxidation, nor anisotropically etching to form the second gates. One of ordinary skill in the art would certainly require a device isolation layer to separate the devices for prevention of shorts. Thermal oxidation is a well known process to form gate insulating layers, and the shape of the second gate clearly suggests anisotropic etching may be used to properly form the second gate.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to require a device isolation layer, use thermal oxidation, and anisotropic etching as discussed above.

Claims 1-2, 4-7, and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the article by Chang.

Chang (Fig. 1 and text) discloses substantially the claimed invention by forming a SONOS type non-volatile memory device with first gate SG, charge storage spacer (the nitride layer on the side), second gate SWG covering the charge storage spacer. An insulating oxide layer is formed on the sidewalls of the first gate (bottom oxide), and a second insulating oxide layer (top oxide) is formed prior to forming the second gate. Although Chang discloses only a single gate, one of ordinary skill in the art would reasonably make a plurality of gates and charge storage spacers with a device isolating layer, since Chang states in the abstract that his structure allows small cell size for high density applications. The shape of the charge storage layer and the second gate suggests anisotropic etching is reasonable to one of ordinary skill in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a plurality of gates and charge storage spacers, and use anisotropic etching as discussed above.

Claims 3, 8-10, 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chandra Chaudhari whose telephone number is 571-272-1688. The examiner can normally be reached on Mon - Fri (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chandra Chaudhari
Primary Examiner
Art Unit 2891

C. Chaudhari
Chandra Chaudhari
October 21, 2005